URO-GENITAL TUBERCULOSIS IN THE MALE.[1]

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TO serve as a text, and for the further reason that one of the features it presents is of sufficient rarity to warrant its being placed on record, I desire to report the following case:

George H., aged fifty-three years; twice married; father of seven children (the youngest twelve months old), was first seen by me on April 19, 1894, on account of a severe hæmoptysis. Family history negative. No history of syphilis. His first wife died of dropsy. His present wife is in good health. Thirty years ago he had pain in the chest with cough and expectoration. Sixteen or eighteen months ago his testicles began to swell and were very painful,—the left one being the worse. Twelve months ago hæmaturia, dysuria, and frequent micturition commenced, and are growing worse in severity. He urinates more frequently at nights. The hæmaturia is not copious, and the history shows that the blood comes from the urethra. He has chills, night-sweats, fever, cough, expectoration, and has lost much flesh and strength. Examination of lungs shows dulness, absence of vesicular murmur, increased vocal fremitus, and bronchial breathing over upper left lobe. The *meatus urinarius* is patulous, admitting the end of my index finger, eroded, and discharging a watery pus. The urethra is indurated and feels like a whip-cord along its whole course. The epididymes, vesiculæ, and prostate are enlarged, hard, nodular, and somewhat tender. The urethral discharge, under the microscope, shows pus-cells and tubercle bacilli. The urine is acid; specific gravity, 1014; albumen, together with blood, pus, and bladder epithelia are present.

[1] Read to the Northwestern Ohio Medical Association, June 29, 1894, at Van Wert, Ohio.

We do not desire, in this paper, to speak of the acute miliary form of tuberculosis, but of that more common form represented by the case reported, which is typically chronic, and is characterized by diffuse inflammation involving a greater or less portion of a given organ with a tendency to caseation of the inflammatory products.

How the infection reaches the genitalia, the point at which the infection begins, and whether or not the disease is always secondary, are questions of prime importance.

In the case reported, the history makes it clear, I think, that the uro-genital tuberculosis was secondary to a pulmonary tuberculosis, and that therefore the infection was, in all probability, carried from the latter to the former by the blood-stream. Primary local infection, inheritance, extension by contiguity and *via* the lymphatics, the other possible modes of infection, may be ruled out.

Cornet[1] has produced tubercular lesions of the penis in dogs by inoculation of abraded surfaces. Jonin[2] saw nine cases of tubercular endometritis due to sexual contact with men suffering with genital tuberculosis, and says that Cornil and Chautemesse have produced the disease artificially in the vaginæ of rabbits. Barbier[3] also believes that a woman may be infected by a tuberculous man, during coitus, through the semen. I have been able to find mention of but two cases of direct local infection in males,[4] and in both of these cases the infection was supposed to have been carried to the prostate by unclean catheters. If direct local infection were common, tubercular ulcers of the foreskin, glans, and other exposed portions should be common, whereas they are extremely rare. Bryson[5] says that competent observers are agreed that the prostato-vesical region is, by many times, the most frequently affected of all the genito-urinary system. Finckh[6]

[1] Senn's Principles of Surgery, p. 537.

[2] Loc. cit., p. 538.

[3] Loc. cit., p. 537.

[4] Genito-Urinary Diseases, Syphilology, and Dermatology. Morrow, Vol. I, p. 842.

[5] Loc. cit., Vol. I, p, 847.

[6] ANNALS OF SURGERY, Vol. VI, p. 54.

and Senn[1] name the epididymis as the most frequent starting-point, the testicles, seminal vesicles, and prostate coming next in the order named.

Professor Bardenheuer[2] also says that tuberculosis of the epididymis is a primary disease. Gerster, as quoted by Mynter,[3] says that "tubercular epididymitis and orchitis is a common sequel of urethral tuberculosis, and is then generally double." This observation I think to be rather unusual. I have found no similar opinion expressed in quite an extensive research, while Senn, Bull, Richardson, Wiest, and Kelly,[4] each write me that they have never seen a case of tubercular urethritis. Lustgarten[5] says it "may in rare instances be a partial symptom of a more or less generalized uro-genital tuberculosis." Bryson[6] says, tuberculosis of the urethra is doubtless very rare, as a primary infection, either of the body or of the uro-genital cycle. Ziegler,[7] in his last edition, does not mention urethral tuberculosis, and Orth gives but a short account of it, and says it is very rare in both men and women. Kraske[8] has observed one case of ulceration of the urethra in connection with general genito-urinary and pulmonary tuberculosis, and one case of ulceration of the glans penis, in which the infiltration extended deep into its structure. In this case there were no signs of pulmonary tuberculosis. Bryson[9] reports a case of tubercular ulcer of the floor of the urethra, one and a half inches behind the *meatus externus*, occurring secondary to old tubercular foci in the lungs and post-cervical lymphatics.

Poncet[10] reported to the French Congress for Study of Tu-

[1] Senn's Principles of Surgery, p. 541.

[2] ANNALS OF SURGERY, Vol. VII, p. 54.

[3] ANNALS OF SURGERY, Vol. XVII, p. 433.

[4] Through Dr. T. S. Cullin, by letter.

[5] System of Genito-Urinary Diseases, Syphilology, and Dermatology. Morrow, Vol. I, p. 143.

[6] Loc. cit., p. 871.

[7] Letter to author from Dr. T. S. Cullin, of Johns Hopkins Hospital.

[8] Senn's Principles of Surgery, p. 541.

[9] Morrow's Genito-Urinary Diseases, pp. 842, 843.

[10] Annual of the Universal Medical Sciences, Vol. III, F. 10, 1894.

berculosis an article on tuberculosis having its origin in the penis. Three varieties are mentioned,—

(1) Balano-preputial tuberculosis;

(2) Tuberculosis of the mucous membrane (this variety usually showing itself in the deep urethra); and,

(3) A tuberculosis of the urethra which consists of fungous masses involving the peri-urethral tissues, thereby allowing the urine to infiltrate the penile structures.

I may also state that none of my colleagues have ever seen a case of tubercular urethritis, either existing alone or as a part of a general uro-genital tuberculosis.

Authorities are pretty generally agreed that the kidneys may be the first organs affected in the uro-genital tract, and that the affection may descend from thence to the prostate, bladder, etc., either by way of the blood- or lymph-channels, or, though rarely, through the urinary stream. Bryson[1] says, he knows of no recorded case proving this latter mode of infection. Indirect local infection,—*i.e.*, infection of the bladder, prostate, vesiculæ, etc.,—through a healthy urethra, must be regarded as highly improbable, if not impossible, as Guyon[2] and other experimenters have shown that pathogenic bacteria do not thrive in healthy urine; besides the tendency of micturition would be to wash them out through the urethra before they would have time to gain a foothold in either the bladder or urethra.

Bryson[3] says his observation "leads to the opinion that extension to the uro-genital tract from the peritoneum is of much more frequent occurrence than is generally believed by surgeons." He also accepts Baumgarten's view that it may be congenital. In view of the numerous clinical observations substantiating the theory of inheritance, and the fact that the bacillus tuberculosis has been found by several observers in the semen,[4] the possibility of direct transmission from father to child no longer admits of doubt.

[1] Loc. cit., p. 844.

[2] Annual of the Universal Medical Sciences, Vol. III, E. 23, 1890.

[3] Loc. cit., p. 846.

[4] The bacillus of tuberculosis has been found in the semen of men whose genital organs were not tubercular.—American Text-Book of Surgery, p. 75.

From the foregoing we learn that while there is considerable difference of opinion as to the most frequent starting-point of uro-genital tuberculosis, there is no question but that it is either the prostato-vesical region or the epididymis. While the authorities do not agree with Bryson's opinion on this point, as given above, yet I am inclined to give it a great deal of weight, inasmuch as he is the latest authority of which I have knowledge, and would surely not make such a statement without having adequate proof of its correctness. No matter which of the two most generally accepted views be taken as correct, the deduction will be the same, —viz., that the infection must in these cases be carried by the blood- or lymph-streams, except in those cases which are secondary to tubercular peritonitis.

It does not necessarily follow, however, that in all these cases there is a tubercular process elsewhere in the body; for nothing is more fully proved than the fact that pathogenic germs (the tubercle bacilli included) may gain entrance to the body at one point and be carried in the blood- and lymph-channels to points far distant before setting up their characteristic reactions. That this occurs in the disease in question is accounted for by the small size and tortuosity of the vessels of the epididymis; the large amount of blood normally supplied to the uro-genital apparatus; its dependent position; the frequent and marked changes which occur in the blood-supply to the parts as a result of sexual excitement, and which are peculiarly calculated to invite attack from septic organisms. The fact that uro-genital tuberculosis is pre-eminently a disease of early adult life emphasizes the importance of this last-mentioned etiological factor, as does the fact, also, of the relatively late appearance of uro-genital tuberculosis as compared with other forms. The latter also goes to prove that the disease in question is usually secondary. Again, we should not lose sight of the fact that a focus of tubercle, say in the lung, may give rise to uro-genital tuberculosis, while the focus itself is well on the road to cure. We are warranted in concluding this part of our paper as follows:

(1) Uro-genital tuberculosis most frequently commences in the epididymis or in the prostato-vesical region.

(2) It is usually secondary to a focus elsewhere in the body, although it may in rare instances be primary.

(3) Being secondary, it may be the only point of activity of the disease, and therefore the only disease-process, the removal or cure of which is necessary to the recovery of the patient.

(4) Primary local infection occurs very rarely.

(5) Secondary infection occurs by the way of the hæmatic or lymphatic channels, or from neighboring organs or tissues in the order of frequency named.[1]

(6) Hereditary infection occurs with greater frequency than is usually believed.

(7) Tuberculosis of the urethra, except as a part of a more or less general uro-genital tuberculosis, is exceedingly rare, and in such cases the deeper urethra only is usually involved, the anterior portion very seldom.

(8) Primary uro-genital infection by way of the blood- and lymph-channels is not impossible, though it is rare.

Views as to treatment vary to correspond to the various views indicated above as to the point of origin, mode of infection, the local or general character of the trouble, etc. Again, the treatment even among those of the same opinion must vary to meet the demands created in individual cases by the location and extent of the trouble.

Where we have reason for believing that the disease is localized in the testicle or epididymis, castration is the only treatment considered worthy of consideration by Finckh,[2] Senn,[3] H. Kolpik,[4] and others, while Verneuil thinks the removal of one testicle gives an impetus to the malady in other organs, and, therefore, extirpates in advanced cases only, and uses interstitial cauterization in cases of moderate severity. Neither Finckh nor Simmonds[5] think that disease of both testicles proves intrapelvic infection, and would not, therefore, refuse double castration.

[1] Morrow, Genito-Urinary Diseases, p. 848.
[2] ANNALS OF SURGERY, Vol. VI, p. 54.
[3] Principles of Surgery, p. 543.
[4] Annual of Universal Medical Sciences, E. 4, 1890.
[5] ANNALS OF SURGERY, Vol. VI, p. 55.

Finckh found the *vas deferens* healthy in five out of eight cases, out of double castration, and Simmonds[1] reports three out of five. Even where there is intrapelvic infection and complete removal of infected parts is impossible, both these authorities advocate castration. Finckh[2] reports a case of this kind which lived twenty-three years after double castration. Removal of the epididymis is recommended by Mynter[3] and Bardenheuer[4] in cases of tuberculosis of this organ, on the general ground that when done early it offers equally as good chances for complete cure as castration, and does not unsex the patient.

Injections of iodoform, zinc chloride, the use of the cautery, and the curette all have their advocates, and in cases where the location of the trouble precludes complete resection, they are ofttimes the best means of treatment, although Mynter (*loc. cit.*) says he never succeeded in curing a single case of epididymitis by these means. Where feasible, complete removal of the diseased organ, except in cases of tuberculosis of the kidney, is preferred by the majority of those qualified to speak with authority.

In cases of kidney tuberculosis incision, drainage, curettement, splitting the capsule, and resection in properly-selected cases are to be preferred to complete removal. All instrumentation, washings of the middle and lower urinary tracts should be carefully avoided in cases of renal tuberculosis; for it is well known that symptoms of vesical irritation often arise early in these cases while the tuberculosis is yet confined to the kidneys. Under these circumstances catheterization, injections, etc., may cause an infection of the lower urinary tract which, but for such interference, would not occur. In case the seminal vesicles are infected, either alone or in connection with the epididymis, they should be removed according to Ullman.[5] It is probably true that the vesicles are affected in all cases of uro-genital tuberculosis where they can be palpated, for Martin, Bangs, and Hayden,

[1] ANNALS OF SURGERY, Vol. VI, p. 55.
[2] Loc. cit.
[3] ANNALS OF SURGERY, Vol. XVII, p. 435.
[4] ANNALS OF SURGERY, Vol. VII, p. 477.
[5] Senn's Principles of Surgery, p. 544.

in the discussion of Dr. Taylor's[1] paper on "Seminal Vesiculitis," all agreed as to the difficulty of palpating the healthy vesicles. Suprapubic cystotomy, in cases where the tubercular process is limited to the urinary passages below the ureters, is perhaps the best palliative treatment and also permits of direct local treatment, which may prove curative.

Senn[2] expresses the hope that if the operation of rectal implantation of the ureters can be perfected in such measure as to become feasible, it may be possible to successfully treat vesical tuberculosis by complete excision of the affected organ. The autoplastic experiments of Rosenberg,[3] in which grafts, cut from the intestines, were successfully used to fill gaps made in the bladder in dogs, leads us to hope that, through this procedure, the prognosis of tuberculous as well as malignant disease of the bladder may become less gloomy.

Instillations, every two to five days, of corrosive sublimate solutions is advocated by Desnoas, Langs, and Guyon[4] in tubercular cystitis. At first a 1 : 5000 solution is used and the strength is increased gradually. Injections of iodoform have also many advocates in this form of the disease, and the results from its use in tubercular joint infections would lead us to expect good results from its use in the disease under consideration. Bryson (*loc. cit.*), however, condemns all antiseptic, bactericidal, and caustic applications and douches. All are agreed, so far as we know, that the complete removal of the disease foci is the proper procedure, where this is possible and feasible, but the methods of removal advocated are many, as has been seen.

Cystotomy, opening, draining, packing, and curetting of abscesses, in properly selected cases, as palliative measures also receive pretty general approval, and yet there seems to be a tendency among genito-urinary surgeons to favor medical in preference to surgical treatment of genito-urinary tuber-

[1] Read at the last meeting of the American Association of Genito-Urinary Surgeons.

[2] Principles of Surgery, p. 546.

[3] Annual of Universal Medical Sciences, F. 38, 1894.

[4] Annual of Universal Medical Sciences, F. 38, 1894.

culosis. In substantiation of this opinion I would refer you to the utterances of Bryson, Bangs, Keyes, Bellfield, Bell, and Chismore in the discussion of Bryson's paper on "The Question of Surgical Interference in Tuberculosis of the Kidney," read at the last meeting of the American Association of Genito-Urinary Surgeons.[1] This tendency is, no doubt, accounted for by the growing belief that uro-genital tuberculosis is usually secondary to tubercular processes elsewhere in the body. Again, the results of surgery in this disease have not been such as to win for it enthusiastic support, while cures, or at least obsolescence, of the disease under proper medical, climatic, hygienic, and dietetic treatment are not infrequent.

The medical treatment of uro-genital tuberculosis differs in no way from the treatment of pulmonary and other forms of tuberculosis, save for the modifications necessary because of the functions, positions, etc., of the diseased organs.

After this paper was written, and the day before the time set for its reading, the patient, whose history is above recorded, died, and we were permitted to make a *post-mortem* examination of the uro-genital organs. The body was much emaciated, *rigor mortis* not marked at twenty-eight hours after death, when the examination was made. Through an abdominal incision, the kidneys, several inches of both upper and lower ends of both ureters, the bladder and prostate, the left testicle and the distal one, and a half inch of the penis were removed. The remaining portions of ureters and urethra were examined *in situ*. The left kidney was somewhat contracted, the pelvis full of flocculent pus, and the substance of the organ riddled with abscesses and caseous nodules. The left ureter was larger than a large lead-pencil, the walls thickened, and the lumen filled with caseous material from the kidney to the bladder.

The right kidney and ureter were normal, save that the kidney was somewhat enlarged and congested, and opening into the pelvis was one small abscess cavity the size of a filbert.

The mucous membrane of the bladder showed general inflammation with spots of erosion. The prostate contained an abscess which held about one ounce of characteristic pus and *débris*, while between

[1] Medical News, June 16, 1894, p. 671.

the bladder and prostate, possibly within the prostate, there was a caseous nodule the size of a small almond. Both vesiculæ were enlarged, hardened, and presented the usual caseous degeneration. Both epididymes also presented caseous degeneration with hardening and enlargement, while both testicles were healthy, so far as could be judged microscopically. The urethra was inflamed, the mucous membrane and peri-urethral tissues thickened and hard, from the bladder to within about one inch of the meatus. This latter part of the urethra was ulcerated, and the surrounding tissues hardened, so that the meatus stood open, and so enlarged from erosion that the tip of my index finger could be introduced. There was no peritoneal infection.

I am much indebted to Drs. Senn, Bull, Kelly, Richardson, Wiest, for their kind replies to my letters of inquiry in connection with the preparation of this paper. Also to Dr. F. S. Cullin, of Johns Hopkins Hospital, for references furnished, and to my student, Mr. L. P. Drayer, for his painstaking examinations of the urine and urethral discharge.